

## Title (en)

Radio Communication Device and Arrival Direction Estimation Method

## Title (de)

Funkkommunikationsvorrichtung und Verfahren zur Schätzung der Wellenankunftsrichtung

## Title (fr)

Dispositif de communication radio et procédé d'estimation de la direction d'incidence

## Publication

**EP 1843487 A1 20071010 (EN)**

## Application

**EP 07112913 A 20030507**

## Priority

- EP 03010293 A 20030507
- JP 2002132069 A 20020507
- JP 2002220302 A 20020729

## Abstract (en)

A receiver having an array antenna (1) estimates arrival directions of multiple paths that arrive with an angular extension. Consequently, arrival direction estimation accuracy can be ensured without increasing throughput even if the power of every path is low by estimating an average arrival direction of an entire set of multiple paths having the angular extension from a result of one angular spectrum by multiple correlation operation units (4) that perform mutual correlation operations with pilot signals for baseband signals received by the array antenna, a path detection unit (6) that detects multiple arrival path receiving timings by generating a delay profile based on output of each of the correlation operation units, a path correlation value synthesis unit (7) that synthesizes a correlation operation value calculated in the multiple correlation operation units and an arrival direction estimation unit (8) that collectively estimates multiple path arrival directions using output of the path correlation value synthesis unit.

## IPC 8 full level

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## CPC (source: EP US)

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## Citation (applicant)

- EP 1028544 A1 20000816 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- GB 2318705 A 19980429 - MOTOROLA LTD [GB]

## Citation (search report)

- [Y] EP 1028544 A1 20000816 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [Y] GB 2318705 A 19980429 - MOTOROLA LTD [GB]
- [A] US 6310704 B1 20011030 - DOGAN MITHAT CAN [US], et al
- [A] US 2002048286 A1 20020425 - BRUNEL LOIC [FR]
- [A] EP 1161001 A2 20011205 - NEC CORP [JP]
- [A] INOUE T ET AL: "TWO-DIMENSIONAL RAKE RECEPTION SCHEME FOR DS/CDMA SYSTEMS IN BEAM SPACE DIGITAL BEAM FORMING ANTENNA CONFIGURATION", IEICE TRANSACTIONS ON COMMUNICATIONS, INSTITUTE OF ELECTRONICS INFORMATION AND COMM. ENG. TOKYO, JP, vol. E81-B, no. 7, 1 July 1998 (1998-07-01), pages 1374 - 1383, XP000790170, ISSN: 0916-8516

## Cited by

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**EP 1361679 A2 20031112**; **EP 1361679 A3 20050413**; **EP 1361679 B1 20080528**; CN 100583710 C 20100120; CN 101729092 A 20100609; CN 101729092 B 20150610; CN 1457164 A 20031119; DE 60321266 D1 20080710; EP 1843487 A1 20071010; EP 1843487 B1 20110706; JP 2004032656 A 20040129; JP 3895228 B2 20070322; US 2003210670 A1 20031113; US 2007273584 A1 20071129; US 2011090120 A1 20110421; US 2011090813 A1 20110421; US 7263083 B2 20070828; US 7860064 B2 20101228; US 8520641 B2 20130827; US 8532064 B2 20130910

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